

REMARKS

Entry of the above amendment is respectfully requested.

Summary of Amendment

Upon entry of the present amendment claim 11 is amended, whereby claims 11-30 will continue to be pending, with claim 11 being the only independent claim. Support for amended claim 11 can be found throughout the present specification. See, e.g., the Examples and page 7, last paragraph of the specification.

Applicants emphasize that the amendment to claim 11 is without prejudice or disclaimer, and Applicants expressly reserve the right to prosecute claim 11 in its original, unamended form in one or more divisional and/or continuation applications.

Summary of Office Action

As an initial matter, Applicants note with appreciation that the Examiner has indicated consideration of the Information Disclosure Statements filed December 11, 2006 and January 14 and June 26, 2008.

Applicants further note that the Examiner has failed to acknowledge the claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f) and the receipt of a copy of the certified copy of the priority document from the International Bureau. Accordingly, the Examiner is respectfully requested to acknowledge the claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f) and the receipt of a copy of the certified copy of the priority document from the International Bureau in the next communication from the Patent and Trademark Office.

Claims 11-27 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by SCHMIDT et al., U.S. Patent No. 6,287,639 (hereafter “SCHMIDT I”).

Claims 11, 17 and 18 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by SCHMIDT et al., U.S. Patent No. 6,378,599 (hereafter “SCHMIDT II”).

Claims 28, 29 and 30 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Espin et al., U.S. Patent No. 6,513,592 (hereafter “ESPIN”) in view of SCHMIDT I.

Response to Office Action

Reconsideration and withdrawal of the rejections made in the present Office Action are respectfully requested, in view of the foregoing amendment and the following remarks.

Response to Rejections under 35 U.S.C. § 102(b)

Claims 11-27 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by SCHMIDT I and claims 11, 17 and 18 are additionally rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by SCHMIDT II. The rejections essentially allege that SCHMIDT I and SCHMIDT II disclose all of the elements which are recited in the rejected claims.

Applicants respectfully disagree with the Examiner in this regard. At any rate, independent claim 11 has been amended to additionally recite therein that the claimed consolidation agent is particle-free. In contrast, SCHMIDT I and SCHMIDT II disclose exclusively compositions which comprise (colloidal) particles as essential components thereof. For example, the abstract of SCHMIDT I states (emphasis added):

A composite material is described which is characterized by a substrate and by a nanocomposite which is in functional contact with the substrate and is obtainable by surface modification of

- a) colloidal inorganic particles with
- b) one or more silanes of the general formula (I)



where the radicals A are identical or different and are hydroxyl groups or groups which can be removed hydrolytically, except methoxy, the radicals R are identical or different and are groups which cannot be removed hydrolytically and x is 0, 1, 2 or 3, where $x \geq 1$ in at least 50 mol % of the silanes;

under the conditions of the sol-gel process with a below-stoichiometric amount of water, based on the hydrolysable groups which are present, with formation of a nanocomposite sol, and further hydrolysis and condensation of the nanocomposite sol, if desired, before it is brought into contact with the substrate, followed by curing, said substrate not being a glass or mineral fiber or a vegetable material.

See also the Examples of SCHMIDT I, which without exception describe the employment of (SiO_2 or ZrO_2) nanoparticles.

Further, the abstract of SCHMIDT II (which is a family member of SCHMIDT I) states
(emphasis added):

A foundry binder is obtainable by surface modification of

- a) colloidal inorganic particles with
- b) one or more silanes of the general formula (I)



where the radicals A are identical or different and are hydroxyl groups or groups which can be removed hydrolytically, except methoxy, the radicals R are identical or different and are groups which cannot be removed hydrolytically and x is 0, 1, 2 or 3, where $x \geq 1$ in at least 50 mol % of the silanes; under the conditions of the sol-gel process with a below-stoichiometric amount of water, based on the hydrolysable groups which are present, with

formation of a nanocomposite sol, and further hydrolysis and condensation of the nanocomposite sol, if desired, before it is brought into contact with the foundry sand.

Accordingly, the consolidation agent recited in amended claim 11 differs from the compositions taught by SCHMIDT I and SCHMIDT II for at least the reason that it is particle-free. In view thereof, it is apparent that SCHMIDT I and SCHMIDT II are unable to anticipate the subject matter of any of the claims submitted herewith. Accordingly, withdrawal of the rejection of claims 1-27 under 35 U.S.C. § 102(b) over SCHMIDT I or SCHMIDT II is warranted and respectfully requested.

Response to Rejection of Claims under 35 U.S.C. § 103(a)

Claims 28, 29 and 30 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over ESPIN in view of SCHMIDT I. The rejection alleges that ESPIN teaches a process for consolidating sand formations comprising injecting a consolidation system into the formation and curing thereof and further teaches the consolidation system is a fluid suspension of nanoparticles as disclosed in PCT/EP97/06370, of which SCHMIDT I is the English equivalent. The rejection concedes that ESPIN does not teach the claimed consolidation agent but alleges that “[i]t would have been obvious to a person of ordinary skill in the art to inject the agent of claim 11 into the formation and curing thereof for the benefit of consolidating sand formations, because [ESPIN] specifically teaches the particles of [SCHMIDT I]”.

This rejection is respectfully traversed. In particular and as (implicitly) acknowledged by the Examiner, a critical feature of the method taught by ESPIN is the use of a composition which comprises nanoparticles. For example, the abstract of ESPIN states (emphasis added):

A method is disclosed for consolidating an unconsolidated formation, which method includes the steps of providing a well drilled to an unconsolidated formation, providing a consolidation fluid in the form of a fluid suspension of nanoparticles, and flowing said consolidation fluid through the well and into the unconsolidated formation so as to position the nanoparticles between grains of the unconsolidated formation whereby the formation is consolidated over time.

Further, at page 2, lines 47-63 ESPIN explains the important function of nanoparticles for the method taught therein (emphasis added):

... Following injection of the displacement fluid, a consolidation system 16 is then injected. In accordance with the present invention, the consolidation system 16 is a fluid suspension of nanoparticles, preferably an aqueous suspension of nanoparticles as will be more thoroughly discussed below.

During this injection, nanoparticles lodge between loose grains of the unconsolidated formation. Consolidation occurs over time, and can be expedited as described below, wherein the nanoparticles form a bond of sufficient strength with adjacent contacting grains of sand that the Young's Modulus of the formation is substantially increased, for example to values of greater than or equal to about 1×10^6 psi. This is a substantial improvement as compared to untreated unconsolidated formations which can frequently have a Young's Modulus of less than or equal to about 0.4×10^6 psi.

The above statements in ESPIN make it abundantly clear that nanoparticles are a critical and indispensable feature of the method disclosed therein, wherefore ESPIN not only fails to render it obvious to one of ordinary skill in the art to employ the particle-free consolidation agent of the present invention for the purposes disclosed therein, but even teaches away therefrom.

Applicants submit that for at least all of the foregoing reasons, ESPIN in view of SCHMIDT I is unable to render obvious the subject matter of any of the present claims, wherefore withdrawal of the rejection of claims 28, 29 and 30 under 35 U.S.C. § 103(a) over these documents is warranted and respectfully requested as well.

CONCLUSION

In view of the foregoing, it is believed that all of the claims in this application are in condition for allowance, which action is respectfully requested. If any issues yet remain which can be resolved by a telephone conference, the Examiner is respectfully invited to telephone the undersigned at the telephone number below.

Respectfully submitted,
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